OPUS-F

OBJECT CODE MAINTENANCE SYSTEM

FOR THE UNIVAC 1050 FASTRAND

30 November 1965
Revision 2

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OPUS-F

1.0 GENERAL

OPUS-F is a service routine designed to provide the functions necessary to maintain PAL object code on Drum Files, Drum Master Instruction Files and Drum System Libraries. The PUNCH command also makes it possible to obtain object decks of programs from the drum.

OPUS-F allows object programs to be filed and replaced from cards and by use of the ALTER and SQZE commands makes it possible to correct object code on the drum.

OPUS-F does not provide source code program facilities or the ability to file or replace from the drum. The services are provided by AJAX-F.

Drum formats are these described in the 1050 Software for FASTRAND document.

Card formats are those of the 1050 PAL Assembly System.

The following commands pertaining to object code are accepted by OPUS-F:

a. FILEC
b. REPLC
c. PUNCH
d. ALTER
e. SQZE
f. STOP

In addition, OPUS-F makes use of the INOUT command to direct it to the proper file.

Octal Numbers:

An octal number must be preceded by a decimal zero.

Headers and Sentinels:

All programs being filed or replaced from the card reader must have proper object code headers and sentinels as described in the 1050 System Tape formats.

Program IDs will represent characters 0, 1, 2 and 3 of the PD Entry as with AJAX-F.

2.0 COMMAND CARDS

INOUT COMMAND:

FORM:

OP	OPERANDS
INOUT	p1

where: p1 = Two characters indicating the systems area which describes the file where work is to be performed. The first character is an asterisk (*) and the second is the systems area identifier associated with the systems area concerned.

** = Systems Programming File.

*$ = Scratch Area

*A thru *Z = User Library

NOTE: An INOUT command must precede all other commands to OPUS-F and may be used at any time to change the Input File.

REPL COMMAND:

FORM:

OP	OPERANDS
REPLC	p1

where: p1 = The four character program ID of the object program to be replaced. The object program that is replacing the program named in p1 of the REPLC command card must immediately follow the REPLC command.

FILE COMMAND:

FORM:

OP	OPERANDS
FILEC	

where: One object program in the reader will be filed at the end of the systems file designated by the INOUT Card. A "FILEC" command card must precede each object program to be filed on the drum.

SQZE COMMAND:

FORM:

OP	OPERANDS
SQZE	p1, p2, p3, p4, p5, p6,...pn

where: p1 = The name of the program or segment to be corrected. 4 character I.D.

p2 = The starting address in octal of the characters to be corrected or added to the program.

p3 = The correction in octal. A maximum of 16 characters (8 store locations) may be corrected with one SQZE card.

p4 = "R" if the starting address of the correction requires base address modification at load time. If not, p5 becomes p4, etc.

p5, p6,...pn = Octal numbers pointing to the least significant characters within the correction that may require base address modification at load time. If no modification is required, no parameters are needed.

PUNCH COMMAND:

FORM:

OP	OPERANDS
PUNCH	p1

where: p1 = The four character program I.D., of the object program to be punched from the drum,

or p1 = "ALL" in which case all of the object code contained on the input library will be punched. The input library will be that which was designated by p1 of the previous INOUT card.

NOTE: No program headers or sentinels will be punched.

ALTER COMMAND:

FORM:

OP	OPERANDS
ALTER	p1, p2

where: p1 = The four character program I.D. of the object program to be altered.

p2 = An octal number indicating the number of characters that are added to a program by use of the SQZE command.

STOP COMMAND:

FORM:

OP	OPERANDS
STOP	

This command is always the last command to OPUS and must always be present.

APPENDIX I

EXAMPLES:

SERVICE	FUNCTION	COMMANDS NEEDED
PUNCHING (Object only)	Punch one program.	1. INOUT ** 2. PUNCH CTAB 3. STOP
REPLACING (Object only)	Replace one program from cards.	1. INOUT ** 2. REPLC CTAB Q { PROGRAM TO REPLACE WITH : { Y } 99. STOP
FILING (Object only)	File one object program from cards.	1. INOUT ** 2. FILEC Q { PROGRAM TO BE FILED : { Y } 99. STOP
OBJECT CODE CORRECTIONS	Correct 2 characters in program AAA which is absolute. The 2 characters start in location 04000.	1. SQZE AAA, 04000, 07777 99. STOP
	Add a jump instruction in relative program B. The starting address and the instruction address need base address modification at load time. The instruction is to be loaded into program relative location 05000.	1. ALTER B, 05 2. SQZE B, 05000 } Same line 03000051000, R, 04 } Same line 99. STOP

APPENDIX II

OPUS-F STOP LIST

DISPLAY	REASON AND ACTION
063177	OPUS-F ready, depress start.
063120	p1 - cannot locate.
063157	Cannot recognize command. Reload proper command. Depress start.
063150	Header missing REPLC or FILEC. Reload header card. Depress start.
063100	Error SQZE command. Reload proper command. Restart.
120000	Punch abnormal. Clear punch problem. Depress start.
110000	Reader abnormal. Clear reader. Reload card. Depress start.
100000	Printer off-normal. Clear problem. Depress start.
063172	No INOUT card. Load one. Depress start.
063141	Illegal I.D. - No *. Reload corrected card. Restart.
0160000	Attempted write-in lockout area. Restart
0160033	Unrecoverable Fastrand error. Restart.
*063133	Unable to complete. File size exceeded. Restart.
*063144	Unable to complete. PD - table size exceeded.

*See repacking facility in AJAX-F.